USSN: 08/224,961

In the Claims

Please amend claim 3 as follows.

53 ~~3.~~ (amended)

[The method according to claim 1 wherein] A method for laser induced breakdown (LIB) of a material with a pulsed laser beam, the material being characterized by a relationship of fluence breakdown threshold versus laser pulse width that exhibits a rapid and distinct change in slope at a predetermined laser pulse width where the onset of plasma induced breakdown occurs, said method comprising the steps of:

b1

a. generating a beam of one or more laser pulses in which each pulse has a pulse width equal to or less than said predetermined laser pulse width; and

b. focusing said beam to a point at or beneath the surface of the material so that the laser beam defines a spot and has a lateral gaussian profile characterized in that fluence at or near the center of the beam spot is greater than the threshold fluence whereby the laser induced breakdown is ablation of an area within the spot.

Please amend claim 6 as follows.

35 ~~6.~~ (amended)

b2

[The method according to claim 1 wherein the material] A method for laser induced breakdown (LIB) of a material with a pulsed laser beam, the material being characterized by a relationship of fluence breakdown threshold versus laser pulse width that exhibits a rapid and distinct change in slope at a predetermined laser pulse width where the onset of plasma induced breakdown occurs, said method comprising the steps of:

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a. generating a beam of one or more laser pulses in which each pulse has a pulse width equal to or less than said predetermined laser pulse width; and

b. focusing said beam to a point at or beneath the surface of the material which is biological tissue, the pulse width is 10 to 10,000 femtoseconds and the beam has an energy of 10 nanojoules to 1 millijoule.

am'd B2

Please amend claim 7 as follows:

7. (twice amended)

[The method according to claim 1 wherein the characteristic pulse width is] A method for laser induced breakdown (LIB) of a material with a pulsed laser beam, the material being characterized by a relationship of fluence breakdown threshold versus laser pulse width that exhibits a rapid and distinct change in slope at a predetermined laser pulse width where the onset of plasma induced breakdown occurs, said method comprising the steps of:

a. generating a beam of one or more laser pulses in which each pulse has a pulse width equal to or less than said predetermined laser pulse width obtained by determining the ablation (LIB) threshold of the material as a function of pulse width and by determining where the ablation (LIB) threshold function is no longer proportional to the square root of pulse width; and

b. focusing said beam to a point at or beneath the surface of the material.

B3

Please amend claim 13 as follows.

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13. (twice amended)

B4 The method according to claim 1 wherein the breakdown includes changes caused by <u>one or more of</u> ionization, free electron multiplication, dielectric breakdown, plasma formation, and[/or] vaporization.

Please amend claim 24 as follows:

37 ~~24~~. (twice amended) 34

B3 The method according to claim ~~21~~ wherein the breakdown includes changes caused by <u>one or more of</u> ionization, free electron multiplication, dielectric breakdown, plasma formation, and[/or] vaporization.

Please amend claim 32 as follows.

40 ~~32~~. (twice amended) 37

B4 The method according to claim ~~29~~ wherein the breakdown includes changes caused by <u>one or more of</u> ionization, free electron multiplication, dielectric breakdown, plasma formation, and[/or] vaporization.

Please amend claim 37 as follows.

45 ~~37~~. (twice amended)

B7 The method according to any one of claims [1, 2, 5,] 35 ~~8~~, [21,] or 37 ~~29~~ wherein said beam is obtained by chirped-pulse amplification (CPA) means comprising means for generating a short optical pulse having a predetermined duration; means for stretching such optical pulse in time; means for amplifying such time-stretched optical pulse including solid state amplifying media; and means for recompressing such amplified pulse to its original duration.

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Please amend claim 40 as follows.

36 ~~40~~. (amended)

A method for laser induced breakdown (LIB) of a material by plasma formation with a pulsed laser beam, the material being characterized by a relationship of fluence breakdown threshold versus laser pulse width that exhibits a distinct change in slope at a characteristic laser pulse width, said method comprising the steps of:

a. generating a beam of one or more laser pulses in which each pulse has a pulse width equal to or less than said characteristic laser pulse width, said characteristic pulse width being defined by the ablation (LIB) threshold of the material as a function of pulse width where the ablation (LIB) threshold function is no longer proportional to the square root of pulse width; and

b. focusing said beam to a point at or beneath the surface of the material and inducing breakdown by plasma formation in the material.

Please add new claims 41 through 45.

21 ~~41~~.

The method according to claim 1 wherein the laser beam defines a spot and has a lateral gaussian profile characterized in that fluence at or near the center of the beam spot it greater than the threshold fluence whereby the laser induced breakdown is ablation of an area within the spot.

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42. The method according to claim 41 wherein the spot size is a diffraction limited spot size providing an ablation cavity having a diameter less than the fundamental wavelength size.

43. The method according to claim 1 wherein the material is biological tissue, the pulse width is 10 to 10,000 femtoseconds and the beam has an energy of 10 nanojoules to 1 millijoule.

44. The method according to claim 1 wherein the characteristic pulse width is obtained by determining the ablation (LIB) threshold of the material as a function of pulse width and determining where the ablation (LIB) threshold function is no longer proportional to the square root of pulse width.

45. The method according to any one of claims 1, 2, 5 or 41 wherein said beam is obtained by chirped-pulse amplification (CPA) means comprising means for generating a short optical pulse having a predetermined duration; means for stretching such optical pulse in time; means for amplifying such time-stretched optical pulse including solid state amplifying media; and means for recompressing such amplified pulse to its original duration.

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